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The Next Generation Air Particle Detectors for the United States Navy

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Design and testing of the United States Navy's next generation air particle detector (NGAPD) is presently underway. The NGAPD is intended for use in nuclear applications for the United States Navy and is being designed to detect airborne Co-60 with a reduction in false alarms and improved ease of use. Features being developed include gamma compensation, low maintenance, commercial off-the-shelf electronics, and spectrum simulation for quality assurance and functional testing applications. By supplying a spectrum simulator, the radon stripping algorithm can be running when a simulated anthropogenic source spectrum (e.g., from Co-60 or transuranics) is superimposed on the radon progeny spectrum. This will allow alarm levels to be tested when the air flow is running and the radon stripping algorithm is providing the instrument response output. Modern units evaluate source spectra with the air flow off and the radon spectrum absent thereby not testing the true system performance which comes out of the radon stripping algorithm. Testing results of the preliminary prototype show promise along with computer simulations of source spectra. Primary testing results taken to date include gamma compensation, thermal insults, vibration and spectrum simulation.

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